



Class 12 Mathematics | Differential Equations

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. The order of $d^2y/dx^2 + 3dy/dx + y = 0$ is:

A. 2 B. 1 C. 3 D. 0

2. The degree of $(d^2y/dx^2)^3 + (dy/dx)^2 = 0$ is:

A. 1 B. 3 C. 2 D. 6

3. The general solution of $dy/dx = 2x$ is:

A. $y = x + C$ B. $y = 2 + C$ C. $y = x^2 + C$ D. $y = 2x^2 + C$

4. For $dy/dx = 3x^2$ with $y(0) = 2$, y equals:

A. $x^3 + 2$ B. $x^2 + 2$ C. $x^3 - 2$ D. $3x^3 + 2$

5. The general solution of $dy/dx = y$ is:

A. $y = Cx$ B. $y = x + C$ C. $y = Ce^x$ D. $y = Ce^{-x}$

6. The integrating factor of $y' + 2y = x$ is:

A. e^{2x} B. e^x C. $2x$ D. e^{-2x}

7. The integrating factor of $y' + y/x = x$, $x > 0$, is:

A. x B. e^x C. x^2 D. $1/x$

8. Which equation is separable?

A. $dy/dx = x/y$ B. $dy/dx = \sin(x+y)$
C. $dy/dx = x^2 + y^2$ D. $dy/dx = x + y$

9. The general solution of $dy/dx = -y$ is:

A. $y = Ce^x$ B. $y = Ce^{-x}$ C. $y = -x + C$ D. $y = x + C$

10. A general solution of a first-order differential equation contains:

A. One arbitrary constant
B. No constants
C. Two arbitrary constants
D. Three arbitrary constants

11. The solution of $dy/dx = y/x$ with $y(1) = 3$ is:

A. $y = 3x$ B. $y = x + 2$ C. $y = 3/x$ D. $y = x/3$

12. The solution of $y' = \cos x$ with $y(0) = 1$ is:

A. $y = -\sin x + 1$ B. $y = \sin x$
C. $y = \cos x$ D. $y = \sin x + 1$

13. The equation $dy/dx = F(y/x)$ is classified as:

A. Homogeneous first order
B. Constant coefficient only
C. Second order
D. Always linear

14. For $y' + y = e^x$, the general solution is:

A. $y = e^{-x}/2 + Ce^x$ B. $y = 2e^x + Ce^{-x}$
C. $y = e^x + Ce^{-x}$ D. $y = e^x/2 + Ce^{-x}$

15. The degree of $y' + \sin y = 0$ is:

A. Not defined B. 1 C. 0 D. 2

ANSWER KEY — check after completing all 15 questions

1.A 2.B 3.C 4.A 5.C 6.A 7.A 8.A 9.B 10.A 11.A 12.D 13.A 14.D 15.B

Original exam-style practice • Reference notes: www.physics.guru/cbse-practice-papers/ • Not an official paper

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